Department of Pesticide Regulation

Mary-Ann Warmerdam
Director

Arnold Schwarzenegger
Governor

December 3, 2007 WHS 07-03

TO: County Agricultural Commissioners

SUBJECT: DRAFT METAM SODIUM/METAM POTASSIUM MITIGATION TO CONTROL OFF-SITE AND BYSTANDER SHORT-TERM EXPOSURE

Attached you will find the draft metam sodium/metam potassium (metam) mitigation measures to control off-site and bystander short-term exposure. This document includes all the changes made in response to stakeholder comments. Enforcement will take this document and put it into the information mapping format you are used to and will separate out the instructions for commissioners from the permit conditions. I also attach a document that summarizes the changes made to assist in your review of the mitigation document.

We were tasked with mitigating acute illnesses and injuries of residents and bystanders. Following those instructions, we developed these mitigation measures using science, an evaluation of past illnesses and injuries, and stakeholder comments. Please keep in mind that this proposal allows the commissioners discretion to use mitigation measures that have worked in the past to eliminate illness and injury resulting from metam applications. Developing permit conditions may only be an interim step as there may be regulations that follow. Please keep this in mind when evaluating the permits, notices of intent and inspecting applications. If we follow with regulations, your input into the regulatory process will be extremely valuable.

In discussing the rollout of the new regulations and mitigation measures relating to fumigants, we felt it prudent to hold off on finalizing these mitigation measures until the VOC regulations take effect. I realize this is different than what I have said in the area group meetings and I apologize for the change in direction. However, we realize that there is some confusion out there about fumigant requirements.

Please review this set of draft mitigation measures and send any comments you might have to Linda O'Connell of my staff, at loconnell@cdpr.ca.gov, by December 28, 2007.

Sincerely,

[*Original signed by S. Edmiston*]

Susan Edmiston, Chief
Worker Health and Safety Branch
(916) 445-4222

Attachments

cc: Mr. Jerome R. Campbell, Assistant Director, DPR
Mr. Charles M. Andrews, Chief, Pesticide Registration Branch, DPR
Ms. Nan Gorder, Chief, Enforcement Branch, DPR
Ms. Linda P. O'Connell, Sr. Environmental Scientist, Worker Health & Safety Branch, DPR
Mr. James E. Shattuck, Agricultural Commissioner Liaison

Metam Sodium/Metam Potassium Mitigation to Control Off-Site and Bystander Short-Term Exposure

These requirements apply only to sprinkler and soil injection/shank applications of metam sodium and metam potassium (metam). Applications made using spray blades, flood irrigation or drip irrigation are exempt from these requirements.

GENERAL REQUIREMENTS

When the requirements of the product labeling and these permit conditions differ, the most restrictive shall apply. County Agricultural Commissioners (CAC) may modify the mitigation requirements to include controls they have previously adopted that have successfully limited off-site metam movement.

Restricted Materials Permit Application

In addition to the requirements of Title 3, California Code of Regulations (3 CCR), Section 6428, the operator of the property (or authorized representative) must submit the following additional information with the permit application:

- A map or description of all occupied structures and bystander areas that are ½ mile or less from the application site.

Notice of Intent

A Notice of Intent (NOI) must be submitted at least 48 hours prior to all applications. The CAC may allow less than 48 hours notice if he/she determines that 48 hours are not necessary to adequately evaluate the intended application and necessary mitigation measures.

In addition to information required in 3 CCR 6434(b), the following information must be submitted with the NOI:

- The number of blocks to be treated and acreage of each block.
- The time (within a four-hour window) that each application is scheduled to commence.
- The number of post-application water treatments scheduled and buffer zone.
- Proof of sufficient water availability for application, post-application water treatment, and MITC Control Plan requirements.
- The certified applicator's 24-hour contact telephone number.
- The completed MITC Control Plan if the application is ½ mile or less from an occupied structure or bystander area (Appendix II).

MITC Control Plan

The MITC Control Plan is intended to establish effective response procedures if odors of metam are detected away from the application site and/or symptoms are reported off-site, and to meet the requirements of an accident response plan as specified in 3 CCR 6780. All employees involved in the application and post-application water treatment must receive annual training in response procedures.

For all applications occurring ½ mile or less from an occupied structure or bystander area, the operator of the property must:

- Submit a completed MITC Control Plan to the CAC with the NOI.
- Provide a copy of the MITC Control Plan to any pest control business applying metam.
- Have the MITC Control Plan available, at the work site while the metam application and post-application work activities are performed.

To respond to off-site movement of metam, the operator of the property must have the following irrigation capabilities:

- For applications in a sensitive area, irrigation equipment and water must be available for 48 hours post-application, and must be capable of delivering at least 0.20 inch of water over the treatment site within 3 hours.
- For applications in a standard area, irrigation equipment and water must be available for 24 hours post application, and must be capable of delivering at least 0.20 inch of water over the treatment site within 4 hours. This is not required if the application is 1 mile or greater from occupied structures, bystander areas, or other similar sites determined by the CAC.

Application Restrictions Near Schools

All applications are prohibited within ½ mile of a school property when school is in session, or is scheduled to be in session while the buffer zone is in effect. Follow post-application water treatment requirements for sensitive areas for all applications made ½ mile to one mile from the perimeter of the school property.

Work Activity Restrictions

If an application requires the buffer zone to extend into adjoining agricultural property, the operator of the property must obtain an agreement from the adjoining property operator. The operator of the property must document how the adjoining property operator will ensure workers will not enter the buffer zone. Without such agreement, the buffer zone must not extend into the adjoining agricultural property.

Buffer Zone Determination and Restrictions

Buffer zone designations are found in Appendix III. The CAC has the discretion to designate different buffer zones or consider other mitigating options based on knowledge of local conditions.

Buffer zones are in effect at the start of the application. Buffer zones remain in effect for 24 hours after the completion of the application when two or more post-application water treatments are made. Buffer zones remain in effect for 48 hours after the completion of the application when one post-application water treatment is made. Buffer zones may not extend into properties of occupied structures or bystander areas. The CAC may approve buffer zones that extend across transit sites (streets, highways, etc.).

Time of Application

Applications must start no earlier than one hour after sunrise and must be completed in time to allow all post application water treatments to begin no later than one hour before sunset.

Environmental Conditions

The following environmental conditions must be met and documented prior to initiating application:

- Soil moisture. Applications are allowed only if soil moisture above the depth of application is sufficient to meet the following test appropriate to the soil texture:
  (1) coarse soils (sand and loamy sand), at least enough moisture to form a ball when compressed by hand, that may break when tapped;
  (2) loamy, moderately coarse or medium textured (coarse sandy loam, sandy loam, fine sandy loam) at least enough moisture so that soil forms a ball that holds together when tapped;
  (3) fine texture soils (clay loam, silty clay loam, sandy clay, silty clay, sandy clay loam and clay) at least enough moisture so that the soil is pliable, not crumbly.
- Soil temperature. Applications are allowed only when soil temperature at a depth of three inches is 90^{o} F or below immediately prior to application.

Monitoring Requirements

All pre-application, application and post-application monitoring must be documented on a monitoring form similar to the one in Appendix IV. Monitoring records must be maintained for the duration of the permit or 6 months which ever is longer. The records must be available to the county agricultural commissioner or representative upon request.

The following pre-application and application conditions must be monitored:

- Wind speed and wind direction must be monitored at the application site immediately before the application and every hour until the application is completed. If wind direction shifts toward a sensitive area, air monitoring must be conducted at the downwind side of the field, outer boundary of the buffer zone, using a Draeger Detector Tube specific for MITC or any other instant reading method specific for MITC. If it is not possible to determine which side of the field is downwind, testing must be conducted at all sides of the field. If any reading is 300 ppb or greater, immediately begin the mitigation procedures listed in the MITC Control Plan.
- Soil temperature immediately prior to an application.
- Soil moisture content immediately prior to the application.
- Irrigation specifications (e.g. water pressure, irrigation set number) immediately prior to application.
- Any unusual conditions (e.g. odor, reported illness, equipment failure, spill) observed at the work site.

Post-application field monitoring shall be conducted for 12 hours following application. If the application is made in a sensitive area, or between ½ to one mile of a school property when school is in session (or is scheduled to be in session while the buffer zone is in effect) monitoring is required every hour. Monitoring is required

every two hours if the application is between ¼ mile and ½ mile from occupied structures or bystander areas.

The following post-application conditions must be monitored:

- Wind speed and wind direction.
- Post-application watering information (water application date, start and completion times, amount applied in inches).
- Any unusual conditions observed at the worksite.
- If wind direction shifts toward a sensitive area, air monitoring must be conducted at the downwind side of the field, outer boundary of the buffer zone, using a Draeger Detection Tube specific for MITC, or any other instant reading method specific for MITC. If it is not possible to determine which side of the field is downwind, testing must be conducted at all sides of the field. If any reading is 300 ppb or greater, immediately begin the mitigation procedures listed in the MITC Control Plan.

Post-Application Water Treatment Requirements

For **sensitive areas**, a minimum of three post-application water treatments are required. Water may be applied at any time in response to odor, illness or monitoring results. However, the following post-application water treatments must still be completed within three hours.

- First post-application water treatment: Apply a minimum of 0.20 inch of water to the treated block starting within 30 minutes of completion of the application.
- Second post-application water treatment: Apply a minimum of 0.20 inch of water on the same day of application, beginning no earlier than one hour prior to sunset and completing by midnight.
- Third post-application water treatment: On the day following the application, apply a minimum of 0.20 inch of water beginning no earlier than one hour prior to sunset and completing by midnight.

For **standard areas**, a minimum of two post-application water treatments are required. Each water treatment must be completed within four hours.

- First post-application water treatment: Apply a minimum of 0.20 inch of water to the treated block starting within one hour of completion of the application.
- Second post-application water treatment: Apply a minimum of 0.20 inch of water on the same day of application, beginning no earlier than one hour prior to sunset and completing by midnight.

Exceptions to Post Application Water Treatment Requirements:

- The CAC has the option to eliminate the third post-application water treatment requirement in sensitive areas based on an evaluation of the soil type and moisture content, and knowledge of local conditions and effective control measures previously used.
- The CAC has the option to eliminate the second post-application water treatment requirement in standard areas based on an evaluation of the soil type and moisture content, and knowledge of local conditions and effective control measures

previously used and the application block is greater than one mile from a school in session.

- Between November 1 and March 31, post-application water treatments are not required following shank applications under the following conditions:
  - The application block is greater than ¼ mile from an occupied structure, bystander area, or similar sites determined by the CAC.
  - Metam is applied as a band or to pre-formed beds.
  - The maximum application rate is 60 pounds active ingredient or less per acre.
  - A maximum of 20 acres is treated per day.
  - A soil capping method is utilized by placing a minimum of four inches of soil on top of the bed over the band treatment and compacted using a mechanical device OR the treated area is tarped.
  - For applications meeting all of the conditions listed above, the buffer zone will be 100 feet. The buffer zone will remain in effect for 48 hours after the completion of the application.

SPECIFIC REQUIREMENTS FOR SPRINKLER APPLICATIONS

All equipment must be inspected prior to use to assure it is in good working condition.

The following specific requirements apply for sprinkler applications of metam:

- Applications are limited to a maximum of 25 acres within a 24-hour period when made within ½ mile to 1 mile from the perimeter of school property.
- Applications are limited to 25 acres within a 24-hour period in a sensitive area, and 50 acres within a 24-hour period in a standard area.
- Applications are prohibited from starting or continuing when wind speed at the application site is greater than 10 miles per hour, as measured by an anemometer positioned four to six feet above the ground.
- Multiple Block Applications - Application blocks less than ¼ mile apart are considered multiple blocks. The CAC will determine the buffer zone distance based on the total acreage to be treated each consecutive two-day period, unless 24 hours have elapsed between the start of each sprinkler application (with two or three post-application water treatments) or 48 hours have elapsed between the start of each sprinkler application (with one post-application water treatment). The application blocks must be treated in a sequence that moves away from sensitive sites.

SPECIFIC REQUIREMENTS FOR SHANK APPLICATIONS

All equipment must be inspected prior to use to assure it is in good working condition. The shanks and injector orifices must be below the soil surface before flow begins, and prior to removing the shanks and injector orifices from the soil, the flow must be terminated. Field equipment shall meet the following minimum specifications:

- Dry disconnect fittings (closed system transfer) shall be installed on all tanks and equipment.
- Each tractor saddle tank shall be equipped with a minimum size #50 mesh screen on both the fill and discharge outlets.
- Main line shutoff or by-pass valves shall be used to stop flow to the distribution manifold.
- All systems shall be equipped with an individual shank monitoring system to detect flow problems in each individual shank.
- Dual check valves shall be installed on each outlet between the manifold and as close as possible to the discharge point.
- All components of the delivery system normally below ground shall be metal and suitable for use as provided on the product label.

The following specific conditions apply to shank injection applications of metam:

- Applications are limited to a maximum of 40 acres within a 24-hour period when made within ½ mile to 1 mile from the perimeter of school property.
- Applications are limited to 40 acres within a 24-hour period in a sensitive area, and 80 acres within a 24-hour period in a standard area.
- Multiple Block Applications - Application blocks less than ¼ mile apart are considered multiple blocks. For shank applications, the CAC will determine the buffer zone distance based on the total acreage to be treated each consecutive two-day period, unless 24 hours have elapsed between the start of each shank application (with two or three post-application water treatments) or 48 hours have elapsed between the start of each shank application (with one post-application water treatment.) The application blocks must be treated in a sequence that moves away from sensitive sites.

APPENDIX I
Definitions

Application: Activities required to incorporate metam sodium or metam potassium pesticides into the prepared soil. Applying additional water to the treated soil in order to suppress emission of MITC into the atmosphere is not considered part of the application process.

Bystander Area: An area frequented by people, which may be impacted by a metam sodium/potassium application. These areas include parks, playgrounds, lakes, reservoirs, bus stops, and other similar areas where groups of people visit, or other areas identified by the CAC.

Metam: Pesticide products that contain metam sodium or metam potassium.

MITC: Methyl isothiocyanate. Metam breaks down into a number of compounds. MITC is one of those compounds.

MITC Control Plan: Written procedures that will provide an adequate response in the event odors of metam sodium/potassium are detected away from the application site or symptoms are reported. The plan provides instructions on response procedures to cooperators and employees involved in metam sodium/potassium applications and post-application monitoring.

Multiple Blocks: Contiguous application blocks that are less than 0.25 miles apart, and that are treated consecutively over a 48-hour period.

Occupied Structure: A home or other building that may be occupied for any or all parts of a 24-hour period. Homes occupied by the property owner or permittee are excluded from this definition.

Sensitive Area: An area where the application block is 1/4 mile or less from occupied structures (e.g., residences, employee housing, businesses, schools, convalescent homes, hospitals), bystander areas, and other similar sites determined by the commissioner.

Soil Capping Method: Following a metam band treatment, a minimum of 4 inches of soil is placed on the bed and compacted using a mechanical device.

Spray Blade Method: An 8-14 inch horizontal “V”-shaped blade designed to operate under the soil surface with one or two backward-facing spray nozzles placed under the leading edge. The blade is placed 1-4 inches below the soil surface and the resulting subsurface band is further covered with disk-hillers immediately following to form a 6-12 inch protective cap over the treated band.

Standard Area: An area where the application block is greater than 1/4 mile away from occupied structures (e.g., residences, employee housing, businesses, convalescent homes, hospitals), bystander areas, and other similar sites determined by the commissioner.

Appendix II
MITC Control Plan

The purpose of the MITC Control Plan is to assure procedures are in place to: (1) adequately respond in the event that odors of metam sodium/metam potassium (metam) are detected away from the application site or symptoms are reported, (2) provide instructions on response procedures to cooperators and employees involved in metam applications and post-application monitoring, and (3) notify appropriate governmental, grower and pest control business and registrant/dealer personnel. The plan shall be on site during the application and post-application monitoring period. All employees involved in the application and post-applicaton water treatment must receive annual training in response procedures.

Security of Treatment Site

1. A trained employee must be at the field site continuously during application and during the post-application monitoring. Emergency personal protective equipment (PPE; coveralls over long sleeve shirt and pants, socks, chemical resistant boots, chemical resistant gloves, and a full face respirator or half face respirator and non-vented goggles) must be available at all times.
2. Metam posting signs must be in place at all points of field entry and every 200 feet along public access roads.
3. Metam storage tanks must be locked when not in use.

Response for Handling – Metam Leaks and Spills

1. Evacuate personnel from the leak or spill area. Shut down the application system to stop the leak. If possible, determine wind direction and move personnel and anyone injured upwind and away from the impacted area. Establish control of the area.
2. Immediately administer first aid to anyone who may be injured and contact the appropriate emergency personnel by dialing 9-1-1.
3. Wear emergency PPE and clothing required by the label when assisting with repair of leaks and small spill clean up. For large spills, see #6 below. Emergency PPE must be readily accessible at all times.
4. For small leaks from application and chemigation equipment, put a container under the leak and catch leaking metam. Turn off any equipment valves that may affect the leak. Repair the leak. Return caught material to tank or dispose of properly. Clean up the contaminated area.
5. For small spills, contain the material. If puddles are present, clean it up with absorbent material and dispose of properly. If the soil is contaminated, determine whether removal is necessary. If contaminated soil must be removed, dispose of properly.
6. For large spills, notify HazMat or Fire Department personnel immediately. If properly trained in HazMat responses, wear appropriate PPE (chemical resistant suit, gloves and boots, and self-contained breathing apparatus). Dike the area to prevent spreading and further environmental contamination. If metam has pooled within the dike area, then use a tank truck with vacuum hoses to remove it. Remove the contaminated soil and dispose of properly. The plan may include the assistance of an environmental service company that could provide support in large spill emergencies.
7. Notify the appropriate personnel (see Notification section below).

Mitigation of Off-Site MITC Exposures

If Draeger tube measurements exceed 300 ppb at the downwind end of the buffer zone, or if odors are detected or eye, nose and/or throat irritation is experienced during or following an application, implement the following steps as applicable:

1. Cease the application immediately.
2. Require employees to wear the personal protective equipment required by the labeling, including a full-face respirator or half-face respirator with non-venting goggles.
3. Sensitive area: Immediately apply 0.20 inches of water uniformly over the application block. Water application must be completed within 3 hours, **OR** Standard area: Immediately apply 0.20 inch of water uniformly over the application block. Water application must be completed within 4 hours. Offsite mitigation water applications are not required when the application block is greater than ½ mile from an occupied structure or bystander area.
4. Determine the cause of odor or MITC exposure, correct the problem or wait until conditions are suitable for re-starting the application.
5. Notify the commissioner and all other appropriate personnel within 1 hour of the initiation of the response.
6. Obtain authorization from the commissioner prior to restarting any application that has been ceased due to a response.

Notification of Appropriate Persons/Agencies/Companies

Grower:
Name_____ Telephone_____

On Site Supervisor:
Name_____ Telephone_____

Irrigation Supervisor
Name_____ Telephone_____

Metam Distributor
Name_____ Telephone_____

Pest Control Business if Custom Application
Name_____ Telephone_____

County Agricultural Commissioner's Office (Large Spills/Health Incidents)
Name_____ Telephone_____

Metam Sodium/Potassium Manufacturer
Name_____ Telephone_____

Emergency Services
Ambulance, Fire, County Sheriff, Highway Patrol – Call 9-1-1

Doctor:	**Hospital:**
Name:	Name:
Address:	Address:
Phone:	Phone:

Appendix III

Buffer Zone Tables

Table 1. Buffer Zone Values for Sprinkler Applications
Three Water Applications

Acres Treated	Buffer Zones (feet)			
	320 lbs active ingredient	240 lbs active ingredient	160 lbs active ingredient	80 lbs active ingredient
1	100	100	100	100
5	100	100	100	100
10	200	100	100	100
15	400	200	100	100
20	400	200	100	100
25	600	300	100	100
30	600	300	100	100
35	600	300	100	100
40	600	300	100	100
45	800	400	200	100
50	800	400	200	100

Table 2. Buffer Zone Values for Sprinkler Applications
Two Water Applications

Acres Treated	Buffer Zones (feet)			
	320 lbs active ingredient	240 lbs active ingredient	160 lbs active ingredient	80 lbs active ingredient
1	300	200	100	100
5	800	600	400	200
10	1,300	900	600	300
15	2,000	1,400	900	400
20	2,000	1,400	900	400
25	Prohibited	2,200	1,500	600
30	Prohibited	2,200	1,500	600
35	Prohibited	2,200	1,500	600
40	Prohibited	2,200	1,500	600
45	Prohibited	2,200	1,500	700
50	Prohibited	2,200	1,500	700

Table 3. Buffer Zone Values for Sprinkler Applications
One Post Application Water Treatments

Acres Treated	Buffer Zones (feet)			
	320 lbs active ingredient	240 lbs active ingredient	160 lbs active ingredient	80 lbs active ingredient
1	600	500	200	100
5	1,700	1,200	800	300
10	2,600	1,900	1,300	500
15	Prohibited	Prohibited	2,000	900
20	Prohibited	Prohibited	2,000	900
25	Prohibited	Prohibited	Prohibited	1,400
30	Prohibited	Prohibited	Prohibited	1,400
35	Prohibited	Prohibited	Prohibited	1,400
40	Prohibited	Prohibited	Prohibited	1,400
45	Prohibited	Prohibited	Prohibited	1,600
50	Prohibited	Prohibited	Prohibited	1,600

Table 4. Buffer Zone Values for Soil Injection (Shank) Applications Three Post Application Water Treatments

Acres Treated	Buffer Zones (feet)			
	320 lbs active ingredient[1]	240 lbs active ingredient[1]	160 lbs active ingredient[1]	80 lbs active ingredient[1]
1	100	100	100	100
5	200	200	100	100
10	300	200	100	100
15	500	300	200	100
20	500	300	200	100
25	900	500	200	100
30	900	500	200	100
35	900	500	200	100
40	900	500	200	100
45	Prohibited	2,400	1,200	300
50	Prohibited	2,400	1,200	300
55	Prohibited	2,400	1,200	300
60	Prohibited	2,400	1,200	300
65	Prohibited	2,600	1,400	300
70	Prohibited	2,600	1,400	300
75	Prohibited	2,600	1,400	300
80	Prohibited	2,600	1,400	300

[1]Application rates are expressed for broadcast applications.

Table 5. Buffer Zone Values for Soil Injection (Shank) Applications Two Post Application Water Treatments

Acres Treated	Buffer Zones (feet)			
	320 lbs active ingredient[1]	240 lbs active ingredient[1]	160 lbs active ingredient[1]	80 lbs active ingredient[1]
1	300	200	100	100
5	700	500	300	100
10	1,000	700	500	200
15	1,500	1,100	700	300
20	1,500	1,100	700	300
25	2,400	1,800	1,100	400
30	2,400	1,800	1,100	400
35	2,400	1,800	1,100	400
40	2,400	1,800	1,100	400
45	Prohibited	2,400	1,200	400
50	Prohibited	2,400	1,200	400
55	Prohibited	2,400	1,200	400
60	Prohibited	2,400	1,200	400
65	Prohibited	2,400	1,400	600
70	Prohibited	2,400	1,400	600
75	Prohibited	2,400	1,400	600
80	Prohibited	2,400	1,400	600

[1]Application rates are expressed for broadcast applications.

Table 6. Buffer Zone Values for Soil Injection (Shank) Applications One Post Application Water Treatment

Acres Treated	Buffer Zones (feet)			
	320 lbs active ingredient[1]	240 lbs active ingredient[1]	160 lbs active ingredient[1]	80 lbs active ingredient[1]
1	400	300	100	100
5	1,200	900	600	100
10	1,800	1,400	900	300
15	Prohibited	2,100	1,400	500
20	Prohibited	2,100	1,400	500
25	Prohibited	Prohibited	2,200	900
30	Prohibited	Prohibited	2,200	900
35	Prohibited	Prohibited	2,200	900
40	Prohibited	Prohibited	2,200	900
45	Prohibited	Prohibited	2,600	1,300
50	Prohibited	Prohibited	2,600	1,300
55	Prohibited	Prohibited	2,600	1,300
60	Prohibited	Prohibited	2,600	1,300
65	Prohibited	Prohibited	2,600	1,300
70	Prohibited	Prohibited	2,600	1,300
75	Prohibited	Prohibited	2,600	1,300
80	Prohibited	Prohibited	2,600	1,300

[1]Application rates are expressed for broadcast applications.

Appendix IV
Metam Sodium/Potassium Monitoring Form

Grower Name: _____ Permit Number: _____

Metam Certified Person: _____ Applicator / P.C.O.: _____

Field Location / Site Id. #: _____ Acres Treated: _____

Treatment Method (circle method): soil injection (shank) sprinkler

Soil Meets Pre-Application Moisture Requirement: yes ___ no___

Soil Temperature (3" depth): _____

Water Pressure: _____ (pounds/square inch) Irrigation Rate (inch/hour): _____

Irrigation Set Number: _____ Nozzle Size: _____

Application Start Time:_____ Application Completion Time:_____

SPRINKLER APPLICATION SUMMARY

Set Number	**Lines/Set**	**Length/ Line**	**Start of Injection**	**End of Injection**	**Start of Water Application**	**End of Water Application**

Appendix IV
Metam Sodium/Potassium Monitoring Form - Continued

SPRINKLER AND SHANK ENVIRONMENTAL CONDITIONS SUMMARY

Date: _____	**Time**	**Wind Speed (MPH)**	**Wind Direction (from)**	**Air Monitoring Results**	**Unusual Conditions**
Pre-Application					
Hour 1					
Hour 2					
Hour 3					
Hour 4					
Hour 5					
Hour 6					
Hour 7					
Hour 8					
Hour 9					
Hour 10					
End Application					

Appendix IV
Metam Sodium/Potassium Monitoring Form – Continued

SPRINKLER AND SHANK POST-APPLICATION MONITORING

Date: _____	Time	Wind Speed (MPH)	Wind Direction (from)	Air Monitoring Results	Unusual Conditions
Sensitive Areas and within ½ to One Mile of Schools					
1 hours post app.					
2 hours post app.					
3 hours post app.					
4 hours post app.					
5 hours post app.					
6 hours post app.					
7 hours post app.					
8 hours post app.					
9 hours post app.					
10 hours post app.					
11 hours post app.					
12 hours post app.					

Standard Sites					
2 hours post app.					
4 hours post app.					
6 hours post app.					
8 hours post app.					
10 hours post app.					
12 hours post app.					

Appendix IV
Metam Sodium/Potassium Monitoring Form - Continued

SPRINKLER AND SHANK POST-APPLICATION WATER TREATMENTS

Date/Time Started	Date/Time Completed	Water Application (Inches)	Comments

Changes Made to Metam Sodium/Metam Potassium (metam) Mitigation in Response to Comments

Worksite Plan
We have deleted the worksite plan requirement described in the January 5, 2007, proposal (proposal), and added the requirement that the operator of the property must submit a map or description of all occupied structures that are within ½ mile of the application site.

Work Activity Restrictions
This section previously allowed a buffer zone to extend into a neighboring property if two conditions were met:

1. The neighboring property must be producing an agricultural commodity; and
2. The operator of the property must obtain written permission from the neighboring property owners to allow the buffer zone to be posted on their property.

The November 29, 2007, mitigation proposal (mitigation) now requires the operator of the property to obtain agreement from the adjoining property operator to keep field workers out of the buffer zone; the operator of the property must document the method to be used by the adjoining property operator to ensure workers will not enter the buffer zone. Without such agreement, the buffer zone cannot extend into the adjoining property.

Notice of Intent Requirements
No changes were made in this requirement.

Buffer Zone Determination and Restrictions
Buffer zone tables have been revised. There is now a table for one, two, and three post-application water treatments for sprinkler and shank applications. The distances have also been revised.

The risk management directive issued on December 2, 2002, set the MITC air concentration threshold at 220 ppb as an 8-hour Time Weighted Average (TWA). Since MITC is an irritant that has effects from exposures much less than eight hours, the risk management directive also stated that were are to minimize the likelihood of short-term peak concentrations above 220 ppb. Because of limited data, DPR's Environmental Monitoring staff obtained MITC flux profiles and determined buffer zones for four metam sodium application methods:

1. Sprinkler with one post-application water treatment
2. Shank with one post-application water treatment
3. Sprinkler with intermittent post-application water treatment
4. Shank with intermittent post-application water treatment

For the purpose of developing this mitigation, WHS staff considers intermittent water treatments most like three post-application water treatments. For each of the four application methods listed above, buffer zones were calculated as follows:

WHS staff calculated the arithmetic mean of buffer zone distances generated by Environmental Monitoring staff using Probabilistic Exposure and Risk Model for Fumigants Version 2 (PERFUM2), Fumigant Exposure Modeling System (FEMS), and Industrial Source Complex Short Term Version 3 (ISCST3) models (Barry, 2006). ISCST3 night values were excluded from our mean calculations, as night applications are prohibited in the mitigation proposal. An additional 25 percent was added to the mean value to address peaks. Values were then rounded up to the nearest 100. In order to establish buffer zones for sprinkler and shank applications using two post-application water treatments, WHS staff calculated the arithmetic mean of buffer zone distances for intermittent and one post-application water treatments, added 25 percent to address peaks, and rounded this value up to the nearest 100.

WHS staff then reviewed the circumstances involved with illnesses that occurred from 1992 to 2003 due to agricultural uses of metam sodium, metam potassium, and dazomet. For each illness, we determined the specifics of the application and the distance from the application to the injured/ill person(s). Our goal was to ensure that the proposed buffer zones were longer than the distances involved in these illnesses.

Notification to Property Operators

The previous proposal required growers to notify schools, residences, hospitals, convalescent homes, onsite employee housing, and other similar sites identified by the CAC within 300 feet of the perimeter of the buffer zone that a metam application is scheduled. This requirement has been deleted from the mitigation.

MITC Control Plan and Procedures

In the previous proposal, the control plan required irrigation equipment to deliver at least 0.25 inches of water over the treatment area within three hours when treatment area is within ¼ mile of occupied structures or bystander areas. Similarly, the irrigation equipment was required to deliver at least 0.25 inches of water over the treatment area within four hours when the treatment area is within ½ mile from occupied structures or bystander areas. The current mitigation requires the use of irrigation equipment that is able to deliver at least 0.20 inches of water over the same time frame.

Soil Preparation

This section previously required soil preparation requirements. These requirements have been deleted from the current mitigation, as the same information is on all metam labeling.

Application Rate

The previous proposal limited the maximum application rate for metam. The information has been deleted from the current mitigation, as the same information is on the labeling.

Soil Moisture

This previous proposal required soil moisture in the treatment zone to be in the range of 50-80 percent of field capacity. This requirement has been changed to a “feel” method. Additionally, the wording has been changed to require moisture to be measured above the

treatment zone instead of in the treatment zone. These changes were made to be consistent with the volatile organic compound regulations under development for field fumigants.

Soil Temperature
The previous wording required soil temperature to be between 40^0F and 90^0F. The mitigation now allows applications when soil temperature is 90^0F or below.

Wind Speed
No changes were made in this requirement.

Time of Application
No changes were made in this requirement.

Multiple Block Applications
A definition of multiple blocks has been included in the mitigation.

Application and Post-Application Monitoring
Air temperature had been deleted as a monitoring requirement for sprinkler applications. An additional monitoring requirement has been added for both shank and sprinkler applications: If wind direction shifts towards a sensitive area during application or post-application, monitoring must be conducted at the outer boundary of the buffer zone using a Draeger Detector Tube specific for MITC or any other instant reading method available for MITC.

Post Application Water Treatment Requirements
The previous proposal required 0.25 inches of water to be applied to the treated application block starting within 30 minutes of the completion of the application, an additional 0.25 to 0.5 inches of water to be applied starting no earlier than one hour prior to sunset on the day of application, and a third 0.25 inches of water applied beginning on hour prior to sunset on the day following the application. The current mitigation requires the same timing and number of water treatments as before, but requires the application of 0.20 inches of water for each water treatment.

The exceptions to the water treatment requirement has been changed to more general language. The use of tarps has been included in these exceptions. The exceptions are still allowed only between November 1 and March 31.

Application and Post-Application Restrictions Near Schools
The previous proposal required a ¼-mile minimum buffer zone near schools. The current mitigation prohibits all applications within ½ mile of a school property when school is in session or scheduled to be in session. If the perimeter of the school property is within ½ mile to one mile of a treated field, post-application water treatment requirements for sensitive areas must be followed.

Specific Requirements for Sprinkler Applications
The previous proposal prohibited applications when air temperature is greater than 90^0F. This restriction has been deleted from the current mitigation. The previous proposal required that metam applications be metered over a minimum of six hours and in a minimum of 0.80 inches of water. This requirement has been deleted from the current mitigation. Block size limitations for sprinkler applications are unchanged.

Specific Requirements for Shank Applications
No changes were made in this requirement.